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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,813	10/30/2003	Chang-Ho Liou	LI0U3010EM	6894
23364 7590 12/12/2008 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314-1176				
EXAMINER				
MOON, SEOKYUN				
ART UNIT		PAPER NUMBER		
2629				
MAIL DATE		DELIVERY MODE		
12/12/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/695,813

**Applicant(s)**

LIOU ET AL.

**Examiner**

SEOKYUN MOON

**Art Unit**

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4, 7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-089)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. The Applicant's arguments regarding the newly added claim limitation have been fully considered.

The Applicant argued [Remarks: pg 4 1st full paragraph from bottom] that the inputs to the register of Lee are not exclusively connected to the source of the gamma curve data, but are connected both to the source of the gamma curve data and to a timing signal GMA\_load while the claimed sample/latch circuits need no external timer but rather transmit received data in real time directly to the D/A converters.

Examiner respectfully disagrees.

First, contrary to the Applicant's assertion, Lee is silent regarding whether the source of the gamma curve data and the source of the timing signal GMA\_load are different or not (note that if the source of the gamma curve data and the source of the timing signal are same, then the inputs to the register of Lee are exclusively connected to the source of the gamma curve data, which is also the source of the timing signal). Second, Examiner respectfully submits that the Applicant has failed to cite figures/specification of the instant Application supporting the newly added claim limitation, "*a plurality of sample/latch circuits having inputs connected exclusively to the coding unit*". The Applicant asserted that fig. 3 of the instant Application illustrates the claim limitation. However, Examiner respectfully submits that each of the figures 2 and 3 of the instant Application merely shows a conceptual diagram of the structure/connection of the driving circuit of the instant invention rather an actual physical structure/connection of the driving circuit

of the instant invention. For example, if the figures show the actual physical structure/connection of the driving circuit of the instant invention, the data driver 23 [fig. 2] is exclusively connected to the reference voltage generator 22 [fig. 22] and buffers 227, 228, and 229 [fig. 3] are exclusively connected to DAC 224, 225, and 226 [fig. 3]. However, it is required for the data driver and the buffers of the instant invention to be connected to other signal processing circuits such as a timing controller, a voltage/current source, and a ground in order to drive the display panel of the display of the instant invention. Accordingly, Examiner respectfully requests the Applicant to cite figures and part of the specification supporting the newly added claim.

The Applicant further argued [Remarks: pg 4 last partial paragraph - pg 5 line 2] that the sample/latch circuits of Lee are each connected by a single signal line to the D/A converters whereas the claimed sample/latch circuits are connected by a plurality of signal lines as illustrated in Fig. 4 of the instant Application.

The above Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

In the new ground(s) of rejection, a combination of small DACs of Lee is construed as a single DAC (i.e. each of "DAC 221, 222, ..., and 240" is construed as a DAC) [fig. 3]. Examiner respectfully submits that such interpretation is consistent with the specification of the instant invention because, even in the instant invention, each of DAC 224, 225, and 226 must have small DACs in order to convert two digital signals coming from two different signal lines 231 and 232 into two analog signals simultaneously (as shown on figure 4, the two signals must be processed simultaneously).

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1, 4, 7, and 9** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to **claim 1**, the claim discloses, *"a plurality of sample/latch circuits having inputs connected exclusively to the coding unit"*.

However, Examiner respectfully submits that none of the figures and the specification of the instant Application support the claim limitation.

Appropriate explanation is required.

As to **claims 4, 7, and 9**, the claims are rejected as being dependent upon a base claim rejected under 35 U.S.C. 112, first paragraph.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 4, 7, and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2003/0085859).

As to **claim 1**, Lee teaches a driving circuit [fig. 1] for solving color dispersion [par. (0008) lines 1-3; generating separate sets of gamma reference voltages for respective R, G, and B colors prevents color dispersion], implemented in a flat panel display (“LCD”) [par. (0008) lines 1-3] with a plurality of pixel cells (the pixels included in the LCD), the driving circuit comprising:

a coding unit (“*timing controller*”) [par. (0027) lines 1-5], to generate a plurality of encoded data (“*digital gamma data*”) according to a plurality of characteristic curves (gamma curves);

a reference voltage generator (a combination of “*gamma register 100*” and “*gamma reference voltage generator 200*”) [fig. 2], to receive the encoded data (“*digital gamma data*”) [par. (0027) lines 1-5], convert the encoded data from digital to analog [par. (0027) lines 5-9], and generate a plurality of reference voltages; and

a driving unit (“*I/O*”) [fig. 1], to receive the reference voltages and accordingly drive the display cells;

wherein the plurality of characteristic curves are gamma curves respectively for three primary colors R, G, B [par. (0008)], and the coding unit generates the plurality of encoded data according to the gamma curves respectively for the three primary colors R, G, B at the same time [par. (0032) lines 1-5] (It is noted that digital gamma data for respective R, G, and B colors are obtained based on gamma curves for respective R, G, and B);

wherein the reference voltage generator (a combination of “*gamma register 100*” and “*gamma reference voltage generator 200*”) [fig. 2] comprises: a plurality of sample/latch circuits (the two sets of storing means included in the “*gamma register 100*”, wherein one set of the storing means corresponds to “+” signal processing means and another set of the storing means corresponds to “-” signal processing means) [fig. 2] having inputs connected to the coding unit (“*timing controller*”) [par. (0027) lines 1-5] and arranged to receive the encoded data and apply the encoded data received to a plurality of digital-to-analog converters (the D/A converter units “*210*” and “*240*” included in “*gamma reference voltage generator 200*”) [fig. 3], each digital to analog converter being respectively connected to one of the sample/latch circuits by a plurality of control signal lines [fig. 3], to perform digital to analog conversion according to the encoded data which is outputted by the sample/latch circuit and received by the control signal lines, thereby obtaining the reference voltages.

Lee [fig. 2] teaches the plurality of sample/latch circuits having inputs connected to the coding unit (which is a timing controller) and the source of the GMA\_load.

Lee does not teach the plurality of sample/latch circuits having inputs connected exclusively to the coding unit.

However, Examiner takes Official notice that it is well known in the art to use a timing controller to control the timing of latching data or voltages used to drive pixels of a display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the driving circuit of Lee to use the timing controller as a means for outputting the latching signal, GMA\_load, in order to reduce the number of components within the driving

circuit of Lee, and thus to provide more space for the display panel and the other driving components within the display of Lee.

Since both of the plurality of encoded data and the latch signal, GMA\_load, are supplied from the timing controller, all the inputs of the plurality of sample/latch circuits are connected exclusively to the timing controller (which is equivalent to the claimed coding unit).

As to **claim 4**, Lee [fig. 2] teaches each digital-to-analog converter inputting the encoded data through the plurality of control signal lines.

As to **claim 7**, Lee teaches the driving unit being a data driver ("*data driver 10*") [fig. 1].

As to **claim 9**, Lee does not expressly teach the reference voltage generator comprising a plurality of buffers.

However, Examiner takes official notice that it is well known in the art to use buffers to amplify signals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reference voltage generator of Lee to include a plurality of buffers, to use the buffers to enhance the output amplitude of the signals outputted from the D/A converters included in the reference voltage generator, and to output the enhanced output signals to the driving unit, in order to allow the reference voltage generator to reduce the amount of power required for the D/A converters to output signals sufficiently high enough to drive the pixels of the display, by amplifying the signals outputted from the D/A converters with the buffers.



***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

December 4, 2008

/S. M./

Examiner, Art Unit 2629

/Sumati Lefkowitz/

Supervisory Patent Examiner, Art Unit 2629